

We Claim:

1. A method for fabricating a precious-metal electrode for a storage capacitor, which comprises:

providing a substrate;

applying a catalytically inactive insulation to the substrate;

applying a catalytically active connection region to the substrate, the catalytically active connection region being a precious metal material selected from the group consisting of a precious metal and an oxide of a precious metal;

producing the catalytically active connection region and the catalytically inactive insulation region; and

depositing selectively the precious metal material on the catalytically active connection region by passing an organometallic compound of a precious metal to the substrate at a temperature from 0° to 120°C.

2. The method according to claim 1, wherein the step of producing of the catalytically active connection region and the catalytically inactive insulation region includes patterning the connection region.

3. The method according to claim 1, wherein the step of producing the catalytically active connection region and the catalytically inactive insulation region includes planarizing the connection region and the insulation region.
4. The method according to claim 1, wherein the temperature is from 20° to 80°C during the step of depositing selectively the precious metal material on the catalytically active connection region by passing the organometallic compound of the precious metal material to the substrate.
5. The method according to claim 4, wherein the temperature is from 40° to 70°C during the step of depositing selectively the precious metal material on the catalytically active connection region by passing the organometallic compound of the precious metal material to the substrate.
6. The method according to claim 1, which further comprises choosing the organometallic compound of a precious metal from the group consisting of $\text{Pt}(\text{CO})_2\text{Cl}_2$, Cp^*PtMe_2 , and CpPtMe_3 .
7. The method according to claim 1, which further comprises using a reducing agent while depositing selectively the precious metal material on the catalytically active connection region.

8. The method according to claim 7, which further comprises using hydrogen (H_2) as the reducing agent.

9. The method according to claim 1, which further comprises pressurizing from 10^{-4} to 10 bar during the depositing selectively of the precious metal material on the catalytically active connection region.

10. The method according to claim 9, which further comprises pressuring from 10^{-3} to 10^{-1} bar during the depositing selectively of the precious metal material on the catalytically active connection region.

11. The method according to claim 1, which further comprises selecting the catalytically inactive insulation region from the group consisting of SiO_2 , Si_3N_4 , Al_2O_3 , AlN , BN , MgO , La_2O_3 , LaN , Y_2O_3 , YN , Sc_2O_3 , ScN , TiO_2 , Ta_2O_3 , and oxides of lanthanides.

12. The method according to claim 1, which further comprises including in the catalytically active connection region elements selected from the group consisting of rhodium, iridium, ruthenium, osmium, and rhenium.

13. The method according to claim 1, which further comprises including in the catalytically active connection region oxides of elements selected from the group consisting of rhodium, iridium, ruthenium, osmium, and rhenium.

14. The method according to claim 1, which further comprises selecting the precious metal for the precious-metal electrode from the group consisting of platinum, palladium, rhodium, iridium, ruthenium, osmium, and rhenium.

15. The method according to claim 1, which further comprises depositing the connection region as a layer.

16. The method according to claim 2, which further comprises patterning the connection region using a hard mask.

17. The method according to claim 1, which further comprises depositing the insulation region as a layer.

18. The method according to claim 3, wherein the planarizing step includes a CMP step.

19. A method for fabricating a precious-metal electrode for a storage capacitor, which comprises:

providing a substrate;

applying a catalytically active connection region to the substrate, the catalytically active connection region being a precious metal material selected from the group consisting of a precious metal and an oxide of a precious metal;

applying a catalytically inactive insulation region to the substrate;

producing a catalytically active connection region and a catalytically inactive insulation region; and

depositing selectively the precious metal material on the catalytically active connection region by passing $\text{Pt}(\text{PF}_3)_4$ to the substrate at a temperature of from 80° to 150°C.

20. The method according to claim 19, wherein the step of producing the catalytically active connection region and the catalytically inactive insulation region includes patterning the connection region.

21. The method according to claim 19, wherein the step of producing the catalytically active connection region and the

catalytically inactive insulation region includes planarizing the connection region and the insulation region.

22. The method according to claim 19, wherein the step of depositing selectively the precious metal material on the catalytically active connection region is conducted at a temperature from 100° to 120°C.

23. The method according to claim 19, which further comprises using a reducing agent while depositing selectively the precious metal material on the catalytically active connection region.

24. The method according to claim 23, which further comprises using hydrogen (H₂) as the reducing agent.

25. The method according to claim 19, which further comprises pressurizing from 10⁻⁴ to 10 bar during the step of depositing selectively the precious metal material on the catalytically active connection region.

26. The method according to claim 25, which further comprises pressuring from 10⁻³ to 10⁻¹ bar during the step of depositing selectively the precious metal material on the catalytically active connection region.

27. The method according to claim 19, which further comprises selecting the catalytically inactive insulation region from the group consisting of SiO_2 , Si_3N_4 , Al_2O_3 , AlN , BN , MgO , La_2O_3 , LaN , Y_2O_3 , YN , Sc_2O_3 , ScN , TiO_2 , Ta_2O_3 , and oxides of lanthanides.

28. The method according to claim 19, which further comprises including in the catalytically active connection region elements selected from the group consisting of rhodium, iridium, ruthenium, osmium, and rhenium.

29. The method according to claim 19, which further comprises including in the catalytically active connection region oxides of elements selected from the group consisting of rhodium, iridium, ruthenium, osmium, and rhenium.

30. The method according to claim 19, which further comprises selecting the precious metal for the precious-metal electrode from the group consisting of platinum, palladium, rhodium, iridium, ruthenium, osmium, and rhenium.

31. The method according to claim 19, which further comprises depositing the connection region as a layer.

32. The method according to claim 20, which further comprises patterning the connection region using a hard mask.

33. The method according to claim 19, which further comprises depositing the insulation region as a layer.

34. The method according to claim 21, wherein the planarizing step includes a CMP step.

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